ADDENDUM I

Contained Test Facility Storm Water Pollution Prevention Plan For Construction Activities

CONTENTS

ADDENDUM I

Contained Test Facility Storm Water Pollution Prevention Plan For Construction Activities

1. INTRODUCTION

This is a facility storm water pollution prevention plan for construction activities (SWPPP-CA) at the Contained Test Facility (CTF). This facility SWPPP-CA provides information about CTF. This SWPPP-CA is an addendum to the Idaho National Engineering and Environmental Laboratory (INEEL) SWPPP for Construction Activities—Generic Plan (DOE/ID-10425). The Generic Plan provides information and requirements common to the INEEL. This facility SWPPP-CA is intended to be used in conjunction with the Generic Plan. There also is an INEEL SWPPP for Industrial Activities (DOE/ID-10431) which provides requirements for industrial activities, maintenance actions, and permanent storm water controls.

2. FACILITY DESCRIPTION

The CTF is located at Test Area North (TAN) on the INEEL. Other active and inactive facilities at TAN are the Initial Engine Test (IET) Facility, the Technical Support Facility (TSF), and the Water Reactor Research Test Facility (WRRTF). The primary activity at CTF is the Specific Manufacturing Capability (SMC) Project.

The SMC is a classified project funded by the United States Army. Perimeter fences surround the project facilities as a security measure. The SMC established and built its main facility between 1983 and 1986. A large concrete hangar was constructed at CTF as part of the Aircraft Nuclear Propulsion Project. A facility housing the initial phase of SMC manufacturing operations was constructed inside the concrete hangar. Several new buildings were subsequently added to the SMC Project based on manufacturing, production and storage, and they are shown on the facility map (Appendix IB). The SMC manufacturing and production operations consist of rolling operations in TAN-679 and fabrication and assembly in TAN-629 (the hangar).

2.1 Site Information

The CTF and the INEEL lie in a climatic region classified as a semi-arid steppe. Annual average precipitation for this region is approximately 8 inches. The CTF facilities are constructed on soil and gravel backfill from 0 to 8 feet high. Ditches surround CTF on three sides to collect storm water.

The topography at CTF is generally flat, consisting of gradual sloping asphalt surfaces. Roof drains direct storm water off and away from buildings and onto the asphalt surface. Storm water drains into collection ditches constructed as holding areas for storm water in the event of a major storm. Because of the slope of the terrain, storm water flows do not generate significant velocity and, hence, have little erosion impact on soils and vegetation. There are two concrete flumes located on the north and west slopes that direct storm water from asphalt swales into the surrounding collection ditches. A collection ditch west of CTF is directly connected to the Birch Creek Playa.

Soil around CTF has a high clay content and, consequently, has a low infiltration rate. This is both a disadvantage and an advantage when considering storm water scenarios. One disadvantage is that standing water is more likely to exist after a storm event, and an advantage is that percolation of water into the Snake River Plain Aquifer is much slower, thereby allowing for higher overall contaminant adsorption. The aquifer lies approximately 200 feet below surface at the TAN area. See Appendix IA for additional soil information. Storm water quality has been measured and is presented in the INEEL SWPPP for Industrial Activities (DOE-ID 10431).

2.2 Existing Structural Controls

Structural (both natural and engineered) storm water controls in place at the CTF are as follows (see Appendix IB):

- Asphalt covers most the industrial traffic areas.
- Most surfaces are relatively flat, consisting of gradual sloping asphalt surfaces.
- Asphaltic swales divert storm water toward concrete flumes located along the north and west slopes.

- Concrete flumes divert storm water over the slopes and into the engineered drainage ditches.
- Drainage ditches are around three sides of the CTF facility.
- Ditches direct excess storm water into settling basins.

2.3 Runoff Coefficient

The runoff coefficient for CTF was not calculated because there are no planned construction activities over the next five years.

2.4 Other Controls

The following documents address spill prevention measures and spill response procedures:

- *INEEL Emergency Plan/RCRA Contingency Plan*, Addendum 4, "TAN" (LMITCOa)
- *Subcontractor Requirements Manual* (LMITCOb).

2.5 Site Map

A site map for CTF is included in Appendix IB.

3. FUTURE CTF PROJECTS

Because of DOE funding constraints, it is difficult to determine exactly what construction activities will occur over the next five years. In any case, there are no immediate or known future planned projects for CTF and, hence, no known locations for such projects. Below is a list of possible projects or activities that could occur if budgets are favorable:

- Utility upgrades/expansion for electrical, heating, water, and sewer systems
- Building construction
- Building renovation
- Building demolition
- Decontamination and decommissioning
- Environmental restoration.

4. REFERENCES

DOE-ID, November 1993, *Sitewide Groundwater Monitoring Plan*, EGG-WMO-10383, U.S. Department of Energy Idaho Operations Office.

DOE-ID, *INEEL Groundwater Monitoring Plan*, DOE/ID-10441, U.S. Department of Energy Idaho Operations Office, Current revision.

DOE-ID, *INEL Storm Water Pollution Prevention Plan for Construction Activities*, DOE/ID 10425, U.S. Department of Energy Idaho Operations Office, Current revision.

DOE-ID, *INEL Storm Water Pollution Prevention Plan for Industrial Activities*, DOE/ID 10431, U.S. Department of Energy Idaho Operations Office, Current revision.

Irving, J. S., 1993, *INEL Environmental Resources Document for the Idaho National Engineering Laboratory*, Volumes I and II, EGG-WMO-10279.

Lockheed Martin Idaho Technologies Company, *INEEL Emergency Plan/RCRA Contingency Plan*, Addendum 4, "Test Area North," Manual 16A-4, Current issue.

Lockheed Martin Idaho Technologies Company, *Subcontractor Requirements Manual*, Current issue.

APPENDIX IA

TAN/CTF Geomorphology and Soils

The following discussion of TAN/CTF geomorphology and soils comes from the *INEEL Groundwater Monitoring Plan* (DOE/ID-10441), and the INEEL Environmental Resources Document (Irving 1993). Any references to, or discussion of, Test Area North (TAN) in this summary can be extrapolated to include the Contained Test Facility (CTF).

Test Area North occupies a topographic depression between the base of the Lemhi Range to the northwest, the Beaverhead Mountains to the north and northeast, and a broad topographic swell that roughly traces the axis of the Snake River Plain (SRP) to the southeast. The land surface is relatively flat, with elevations ranging from a low of 1,455 m (4,774 ft) within the Birch Creek Playa basin to a high of 1,544 m (5,064 ft) on Circular Butte. The area's landforms consist of ancient lake beds, broad alluvial basins, and broad plains and plateaus, which follow the form of the underlying lava flows.

The main elements of geology at TAN resemble those found elsewhere on the INEEL. Bedrock consists of sequences of one or more basalt flows interlayered with sedimentary interbeds. Bedrock is overlain by an overburden of lacustrine sediments from ancestral Lake Terreton, and by sediments deposited in the playa lakes at which both Birch Creek and Big Lost River terminate. The lacustrine deposits are exposed at the surface in the southeastern portion of TAN. To the northwest, the lake deposits are overlain by Birch Creek playa deposits measuring from 0.6 m (2 ft) to more than 3 m (10 ft) thick.

The volcanic rock underlying the sedimentary overburden is a dark, hard, tholeiitic basalt that has shown distinct hexagonal jointing in excavations. Geologic descriptions from wells drilled in the TAN area indicate that the basalt exhibits a wide range of textures and structures, varying from dense to highly vesicular, and from massive to highly fractured. Individual flow units have a median thickness of about 4.6 m (15 ft). The median thickness of sedimentary interbeds between basalt flow sequences at TAN is about 1.2 m (4 ft). This is considerably thinner elsewhere on the INEEL, where the median interbed thickness is approximately 3 m (10 ft).

Soils at TAN are developed upon alluvial, lacustrine, and aeolian deposits of sediments, which form a discontinuous blanket over the lava flows underlying the SRP. These sediments were transported to the TAN area largely from the mountains to the north and northwest, and they are thus ultimately derived from the siliceous tertiary volcanics and Paleozoic sedimentary rocks of which those mountains are composed. Outcrops of basalt are common, and soils are relatively shallow in some areas.

Soils at TAN are primarily silty loams and silty clay loams, derived from sediments in ancient Lake Terreton. Their clay-size particle fraction is dominated by clay minerals and hydrous mica. Montmorillonite is more abundant than kaolinite, accounting for the presence of mud cracks. The soil contains an appreciable amount of secondary calcite. It has high water-holding capacity, but is nearly impermeable. Surface water infiltrates through mud cracks, animal burrows, and root holes. Soil samples collected in 1989 displayed the following physical properties: pH from 7.95 to 8.78; cation exchange capacity was 14.27 to 30.42; and organic carbon content of 0.37 to 1.94.

Analysis of Birch Creek stream drainage grain size distribution showed a 7.8% (by weight) fraction less than 0.062 mm, while the median value in the same size range was represented by a 2.5% fraction. Mean percentages of quartz, calcite, feldspar, and dolomite were 44, 28, 15, and 4%, respectively. Illite is the dominant clay mineral found in the soil samples, which also contained small amounts of smectite and kaolite.

The alluvial overburden at TAN varies in thickness from 1.5 to 22.9 m (5 to 75 ft) thinning from west to east. This variation in overburden thickness is largely due to the irregular surface of the underlying basalt flows. The uppermost alluvial layer is in the Birch Creek playa deposit, which covers the area west, northeast, and southwest of TSF situated between TSF and CTF. These playa deposits consist of poorly sorted, fine-grained, light gray to light tan sand, silt, and clay that are typically reworked Lake Terreton sediments. The playa deposits are classified as clayey, sandy silt with 14% clay, 5 to 20% sand, and 50 to 70% silt.

APPENDIX IB

SITE MAP